

Six New Species of *Trivia* from Southern Africa (Gastropoda: Triviidae)

by

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Abstract. Six new species of *Trivia* are described from the seas of southern Africa. The shells and radula are described for *T. magnidentata*, spec. nov. and *T. khanya*, spec. nov. Descriptions of only the conchological features of *T. multicostata*, spec. nov., *T. eratooides*, spec. nov., *T. virginiae*, spec. nov., and *T. lemaitrei*, spec. nov. are provided. Problems associated with the subdivision of the Triviidae are discussed.

INTRODUCTION

THE SOUTHERN and eastern Cape Province coasts of South Africa, from the shallow sub-littoral zone to depths of hundreds of meters, have yielded numerous new molluscan records and species. In an attempt to revise the much confused southern African lamellariacean fauna, I have collected material pertaining to a number of previously unknown species of *Trivia*. Although CATE (1979) presented a systematic revision of the Triviidae based on conchological features, GOSLINER & LILTVED (1982) have discussed problems with this system, in light of internal morphological criteria. However, due to the fact that much of the material examined here had been taken from the stomachs of benthic fishes, the soft parts were no longer present. No choice is left but to describe these new taxa from their shell morphology only, and in two cases the radular morphology is also provided. The subgeneric status of the six new species may only be determined once sufficient preserved material of each species is accumulated and a thorough comparative anatomical examination of the entire family is conducted (GOSLINER & LILTVED, 1982).

Trivia magnidentata Liltved, spec. nov.

(Figures 1-4)

External morphology: One individual (Figure 2) collected in 50 m off Danger Point, western Cape Province, was primarily translucent white in color. Extraordinarily fleshy mantle evenly covered with 1-mm long red dashes. Dorsal rim of mantle surrounded by larger red blotches. Siphon evenly cylindrical, recurved, and translucent white. Tentacles cylindrical and blunt at tips. Foot translucent

white, reaching approximately 40 mm when fully extended. External characters of paratype A (Figure 3) from Walker Bay (slightly to the west of Danger Point) were similar in all respects to the aforementioned individual, apart from lacking red pigmentation on its mantle's outer surface. The mantle of the Walker Bay animal was sparsely pigmented with 2.5-mm wide oval or circular black spots.

Radula (Figure 4): Radula formula, $45 \times 2.1.1.1.2$ in one individual. Rachidian broad, teeth with 9-10 sharp inwardly curved denticles on either side of the sharply pointed, evenly tapered central cusp. Inner lateral teeth with 7-8 small, outwardly curved denticles on outer face. Outer laterals arched, without denticles. Basally, innermost laterals approximately twice as wide as the outermost tooth.

Shell: Large, pyriform, somewhat inflated, tapering anteriorly. Labrum fairly narrow but solidly formed, occasionally reaching up to 2.5 mm beyond lateral plane of body whorl. Labral width normally even throughout its length, occasionally slightly more swollen medially. Labrum bisected by extremely coarse, well-defined bladlike ribs. Ribs continuing farther than just onto the body whorl, and terminating in 10-15 coarse denticles with semi-circular interstices. Anterior and posteriormost labral ribs, also strongly developed as those crossing medial labral width, not terminating as denticles, leaving these areas smooth and devoid of denticles. Eleven to nineteen medially swollen elongate teeth extend in for short distance across base, over columellar peristome, occasionally continuing across columella. Anterior and posteriormost columellar denticles merging with strong ribs that cross base

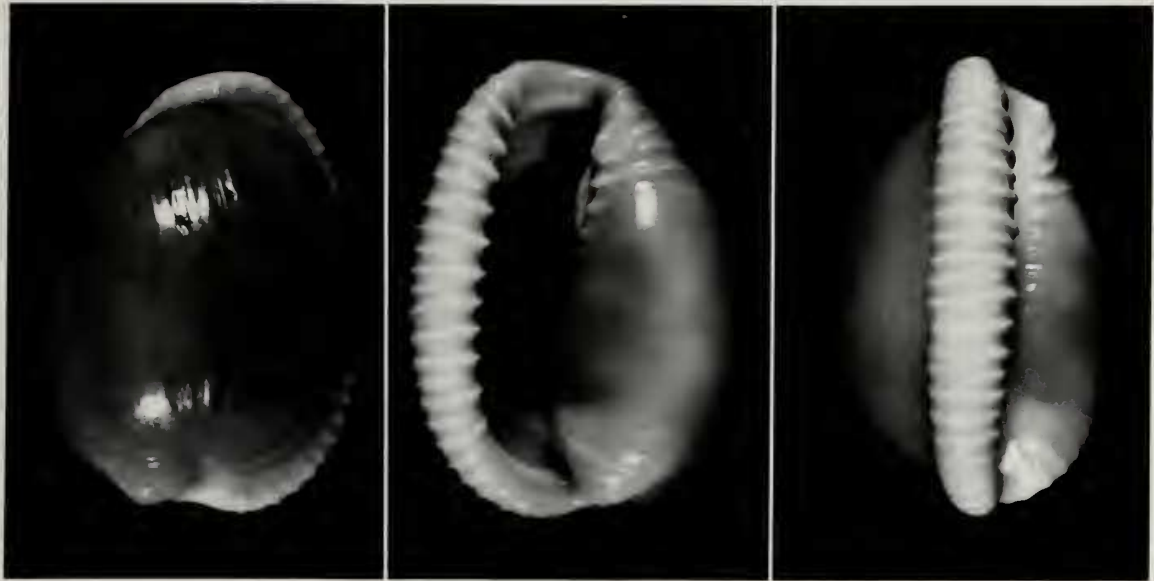


Figure 1

Trivia magnidentata, spec. nov. Holotype shell, 22.1 mm long. Dorsal, ventral, and lateral views.

obliquely. Occasional examples have bases that are entirely transversely crossed by ribs extending short distance up columellar margin. Fossula elongate and curved. Riblets may cross fossular area, extending downward from terminal ridge, merging with 0-5 rounded denticles. Aperture wide, widest anteriorly. Base often heavily calcified, in some cases attaining almost twice thickness of dorsum. Dorsum vaulted, occasionally with maleated texture. Shallow dorsal sulcus or darkly pigmented area may be present mid-dorsally. Spire often fairly elevated, not crossed by fine riblets extending upward from posterior end of base. Shells from the eastern Cape Province tend to be rose-colored dorsally, with heavily calcified white bases.

Shells from the western Cape are normally paler pink or white, and tend to be more lightly calcified.

Measurements:

	<u>length (mm)</u>	<u>width (mm)</u>	<u>height (mm)</u>
holotype	22.1	17.8	13.1
paratype A	20.7	16.6	13.2
paratype B	18.2	14.7	11.6
paratype C	20.9	17.2	13.9
paratype D	22.5	18.0	14.4
paratype E	17.9	15.7	17.7
paratype F	13.8	10.6	8.3
paratype G	17.9	13.5	15.6



Explanation of Figures 2 and 3

Figure 2. *Trivia magnidentata*, spec. nov. Living animal. Figure 3. *Trivia magnidentata*, spec. nov. Paratype A. Living animal.

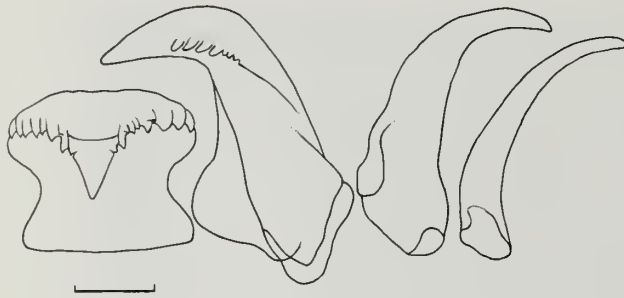


Figure 4

Trivia magnidentata, spec. nov. Half a row of radular teeth. Scale bar = 100 μ m.

Type locality: Jeffreys Bay beach (34°00'S, 25°00'E), eastern Cape Province, South Africa.

Type depository: The holotype (SAM A36796) and seven paratypes (SAM A36797, A36798, A36799, A36800, A36801, A36802, A36803) have been deposited in the South African Museum in Cape Town.

Habitat and distribution: *Trivia magnidentata* has been observed at depths between 30 and 55 m, living in association with various species of compound tunicates. The new species has been recorded at various localities between Olifantsbos in the western Cape Province and East London in the eastern Cape Province.

Etymology: From the Latin adjective *magnus*, meaning "great," and *dentatus*, meaning "toothed," in reference to the unusual labral dentition of the shell.

Discussion: *Trivia magnidentata*, spec. nov. conchologically most closely resembles *T. rubra* (Shaw, 1909). Both species attain approximately the same size and coloration. The labral and columellar dentition of *T. magnidentata* is always far coarser than is seen in *T. rubra*. The transverse labral ribs of *T. rubra*, which are not always present, are weakly defined and seldom cross onto the body whorl. *Trivia magnidentata* has sharp bladellike ribs that cross obliquely over the anterior and posteriormost portions of the base and extend onto the columellar margin. In extreme cases the entire base is endowed with transverse ribbing. Such anterior-posterior ribbing may be present in *T. rubra*, but is always weakly formed, somewhat indistinct, and does not extend over the columellar margin. The shell of *T. magnidentata* tends to taper more sharply anteriorly, rendering the anterior terminal longer and more rostrate than the ovate shell of *T. rubra*. The radular morphology of *T. magnidentata* differs considerably from that of *T. rubra*. The most major difference lies in the structure of the rachidian tooth. The rachidian of *T. magnidentata* is far smaller and more dorsoventrally compressed than that of *T. rubra*. It also lacks the elongate, uneven basal

portion present in the rachidian of *T. rubra*. The denticles on either side of the central cusp in *T. magnidentata* are sharper than in *T. rubra*.

When disturbed the animal was hardly able to retract into its shell. Like various other endemic southern African *Trivia*, the new species must expel water from the mantle before retracting. The water contained in the mantle may create hydrostatic pressure to give the animal additional rigidity.

Trivia khanya Liltved, spec. nov.

(Figures 5, 6)

External morphology: One freshly dead specimen trawled off Mossel Bay, eastern Cape Province, South Africa had a fleshy rust-colored mantle. Siphon white with orange tip, foot white and fleshy.

Buccal mass: Jaws consist of numerous polygonal platelets. Radula (Figure 6) formula, $39 \times 2.1.1.1.2$ in one individual. Rachidian teeth possess 5–6 rounded denticles on either side of long, fairly wide central cusp. Two innermost denticles immediately adjacent to central cusp are situated one above the other. Inner lateral teeth have 4 or 5 prominent denticles on their outer face. Outer lateral teeth are thin and arched, without denticles.

Shell: Medium sized for *Trivia*, globular to pyriform. Anterior terminal may be slightly to greatly produced, projecting only slightly. Labrum wide, normally swollen medially. Labrum bisected by even, widely spaced ribs crossing transversely from 12–14 pronounced denticles, extending just onto body whorl. Thirteen to fifteen elongate denticles are situated on calcified ridge along columella slightly convolute. Concavely produced fossula has anteriormost columellar teeth extend as riblets obliquely across base. Posteriormost columellar teeth occasionally less well developed than those anteriorly situated. Columella slightly convolute. Concavely produced fossula has 5 or 6 small denticles, often formed at base of short riblets, crossing fossular area from anteriormost columellar denticles. Spire always fully visible, protruding slightly. Dorsum smooth and highly nacreous, light to dark pink, occasionally with fulvous, 2–3-mm ovoid markings situated mid-dorsally. Base fairly thickly calloused and white in color.

Measurements:

	length (mm)	width (mm)	height (mm)
holotype	15.3	14.1	11.6
paratype A	13.8	11.5	9.2
paratype B	14.1	12.4	10.1

Type locality: Off Cape Recife (34°00'S, 25°30'E), eastern Cape Province, South Africa, at 130 m.

Type depository: The holotype (SAM A36804) and two

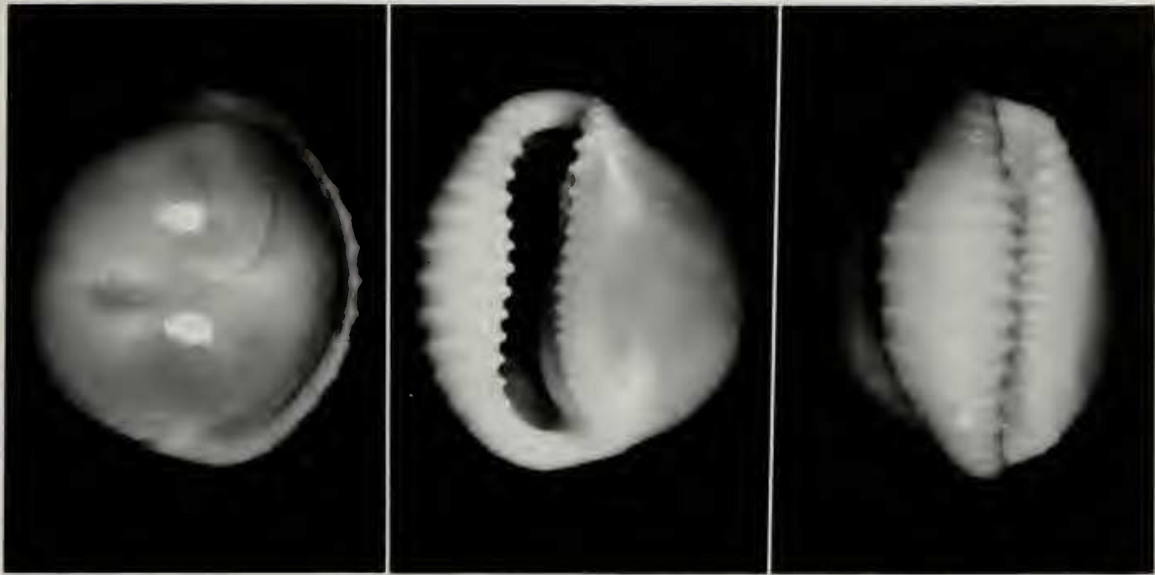


Figure 5

Trivia khanya, spec. nov. Holotype shell, 15.3 mm long. Dorsal, ventral, and lateral views.

paratypes (SAM A36805, A36806) have been deposited in the South African Museum. The type material was collected by commercial fishermen on trawlers working off the eastern Cape Province.

Habitat and distribution: The type specimens were collected from trawls over low-profile reefs off Cape Recife and Cape St. Blaize. All specimens examined were taken from ± 119 m.

Etymology: From the Zulu adjective *khanya*, meaning "to be glossy" or "bright," in reference to the highly lustrous surface of the shell.

Discussion: Globular specimens of *Trivia khanya*, spec. nov. most closely resemble *T. calvariola* Kilburn, 1980. *Trivia khanya* averages half the size of *T. calvariola* and is most often pyriform in shape when compared with the essentially spherical shell of *T. calvariola*. Shells of *T. khanya* may be various shades of pink, whereas *T. calvariola* is invariably white in color. The labrum of *T. calvariola* also is markedly more tumid than that of *T. khanya*.

The radular characteristics of *Trivia khanya* and *T. calvariola* differ markedly. Apart from appearing to have fewer rows and smaller radular teeth than *T. calvariola*, the rachidian tooth of *T. khanya* has 5 or 6 rounded denticles on either side of the central cusp, whereas *T. calvariola* has 8–11 acute denticles similarly situated. The base of the rachidian in *T. khanya* is slightly narrower than the upper half of the tooth; the base of the rachidian of *T. calvariola* far exceeds the width of the tooth's upper half. The inner lateral teeth of *T. khanya* are wider than

those of *T. calvariola* and have 4 or 5 rounded denticles as opposed to 5–8 acute, triangular denticles on the outer face. The outer lateral teeth of *T. khanya* are comparatively much wider and more arched when compared with the long slender outer laterals of *T. calvariola*.

Trivia lemaitrei Liltved, spec. nov.

(Figure 7)

Shell: Medium sized for *Trivia*, globular with vaulted dorsum. Anterior and posterior terminals very slightly produced. Labrum narrow, almost flush with body whorl, which is bisected by relatively widely spaced transverse ribs arising from 9–16 feeble denticles, in some cases only mere crenulations on labrum's inner edge. Columellar

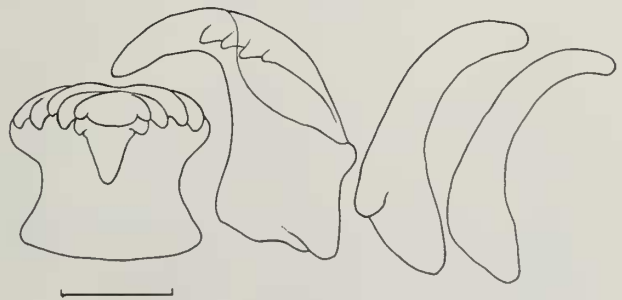


Figure 6

Trivia khanya, spec. nov. Half a row of radular teeth. Scale bar = 100 μ m.

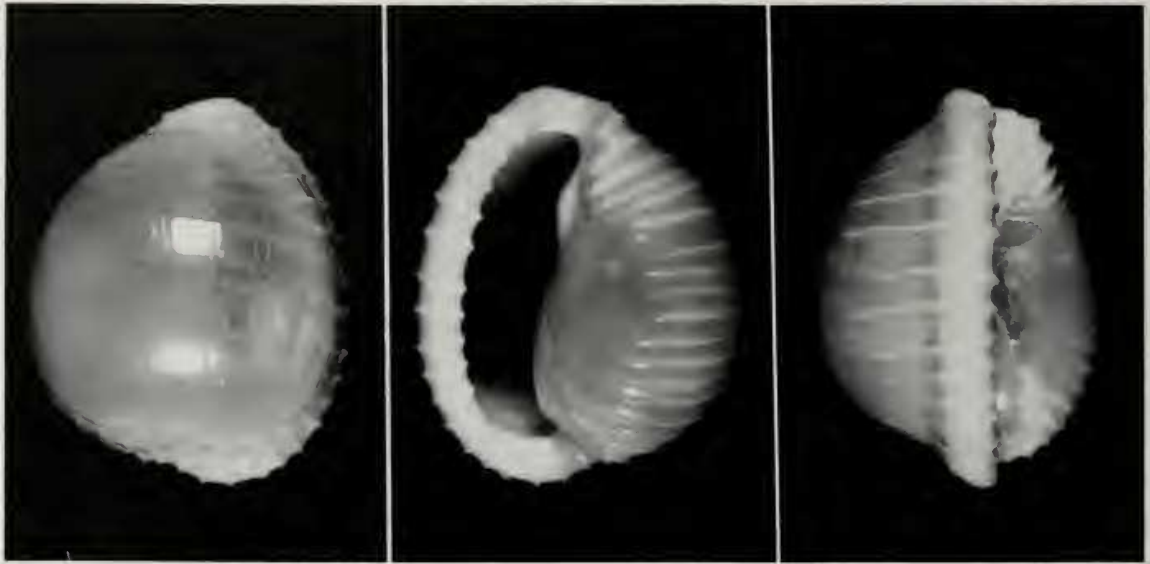


Figure 7

Trivia lemaitrei, spec. nov. Holotype shell, 12.2 mm long, dorsal, ventral, and lateral views.

peristome is edentate in all specimens. Columella deeply convolute and fossula concave, occasionally crenulate. Aperture extremely wide, widest medially. Margins unevenly transversely ribbed, occasionally extending to halfway up body whorl on either side. Ribs continue onto somewhat flattened base, where most often they dissipate medially: anterior and posteriormost ribs continue and occasionally cross peristome onto the columella. Anteriormost basal ribs elevated and bladelike. Dorsum smooth and invariably extremely thin, varying from translucent to transparent. Spire often pointedly produced, occasionally partially obscured by fine ribs. Shell varies from white to pink, occasionally with a darker pink band running along body whorl immediately adjacent to labrum.

Measurements:

	<u>length (mm)</u>	<u>width (mm)</u>	<u>height (mm)</u>
holotype	12.2	10.6	8.4
paratype A	14.1	12.9	10.7
paratype B	11.0	9.3	7.8

Type locality: Off Cape St. Blaize (34°00'S, 22°00'E), eastern Cape Province, South Africa.

Type depository: The holotype (SAM A36807) and two paratypes (SAM A36808, A36809) have been deposited in the South African Museum. The specimens were collected by fishermen on commercial trawlers on an undetermined date.

Habitat and distribution: The type specimens were taken from the stomachs of fish, *Congiopodus torvus* (Wal-

baum) and *C. spinnifer* (Smith), trawled at ± 100 m, off Cape St. Blaize, eastern Cape Province. Specimens have also been washed onto the beach at Jeffrey's Bay, eastern Cape Province, South Africa.

Etymology: The new species is named in honor of Richard Lemaitre of Somerset West, Cape Province, South Africa, who provided the holotype in addition to other type material used in this study.

Discussion: *Trivia lemaitrei*, spec. nov. conchologically most closely resembles *T. vesicularis* (Gaskoin, 1836). The transverse ribs of *T. lemaitrei* are markedly more distantly spaced than those of *T. vesicularis*. The central basal ribs of *T. lemaitrei* tend to dissipate approximately halfway across the base, whereas in *T. vesicularis* these ribs cross the base running over the columellar peristome into the aperture. The aperture of *T. lemaitrei* tends to be wider than that of *T. vesicularis* and the labrum is normally more arched. The columella of *T. lemaitrei* is also markedly more convolute than that of *T. vesicularis*. At maturity the shell of *T. vesicularis* has continuous transverse ribs crossing the dorsum, whereas in 10 specimens of *T. lemaitrei* examined, these ribs reached only approximately halfway up the body whorl on either side.

Trivia multicostata Liltved, spec. nov.

(Figure 8)

Shell: Medium sized for *Trivia*, subglobular, thin, and elongate. Anterior terminal produced, whereas posteriorly less produced. Labrum narrow and exteriorly forming

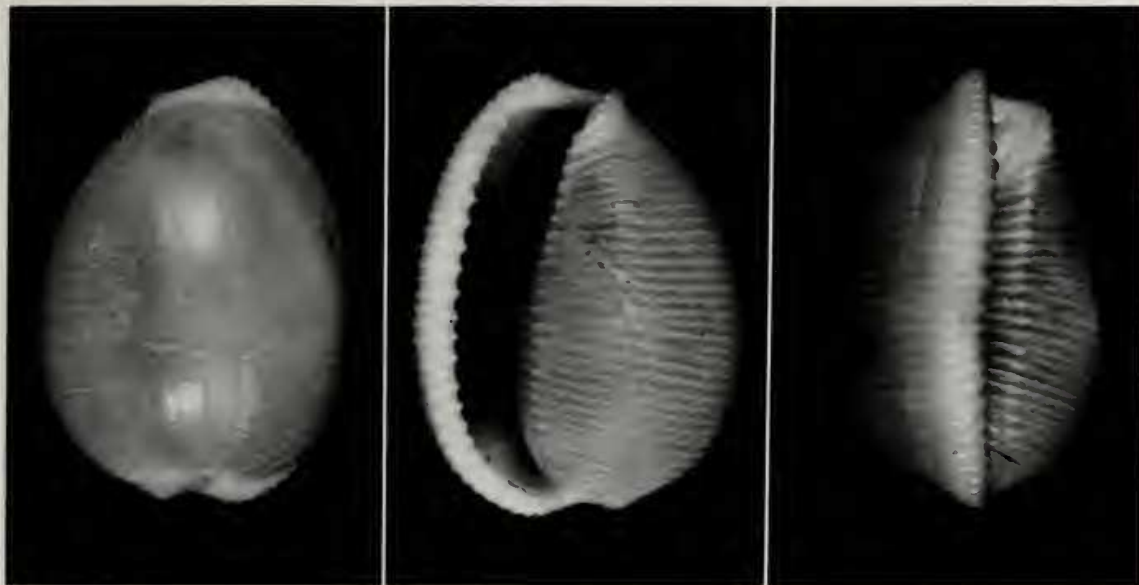


Figure 8

Trivia multicosata, spec. nov. Holotype shell, 16.3 mm long. Dorsal, ventral, and lateral views.

continuous plane with body whorl. Fifteen to twenty-two labral denticles pointed, extremely fine, with rounded interstices. Fine, evenly spaced ribs cross labrum and extend continuously around body whorl onto columella. Dorsal sulcus or rib alternation absent mid-dorsally. Twenty to twenty-seven evenly spaced denticles present along columellar peristome, elongate calcified portions of transverse ribs extending into aperture. Columella slightly bowed, and fossular area slightly concave but minimally developed. Zero to seven fine denticles may be present in this area. Aperture dilated due to narrowness of labrum, bowed and of even width throughout its length. Spire somewhat produced and rounded, being crossed vertically by fine ribs, not obscuring it at all. Body whorl of mature shell so thin as to render it translucent and occasionally transparent. Color varies from white to pale pink.

Measurements:

	length (mm)	width (mm)	height (mm)
holotype	16.3	12.6	10.4
paratype A	12.6	10.1	8.2
paratype B	12.5	10.1	8.0

Type locality: Off Cape St. Blaize (34°00'S, 22°00'E), eastern Cape Province, South Africa.

Type depository: The holotype (SAM A36810) and two paratypes (SAM A36811, A36812) have been deposited in the South African Museum. The specimens were collected by fishermen on commercial trawlers on an undetermined date.

Habitat and distribution: The type specimens were taken from the stomachs of the fish *Congiopodus torvus* (Walbaum) and *C. spinnifer* (Smith), trawled at ± 100 m, off Cape St. Blaize, eastern Cape Province, South Africa.

Etymology: From the Latin adjective *multi*, meaning "many," and *costa*, meaning "ribbed," in reference to the numerous fine transverse ribs present on the shell.

Discussion: *Trivia multicosata*, spec. nov. appears to be closely related to *Trivia costata* (Gmelin, 1791). Individuals of both species tend to attain a similar size and shape. *Trivia multicosata* has a thinner, more inflated shell, which is covered with extremely fine, evenly spaced transverse ribbing. *Trivia costata* is considerably more heavily calcified and has a less vaulted dorsum with fewer ribs. The aperture of *T. multicosata* may be nearly twice as wide as that of *T. costata*. This is essentially due to the labrum's narrowness in *T. multicosata*. The labral denticles of *T. multicosata* are much finer and more numerous (15–22 in *T. multicosata*, 9–18 in *T. costata*) when compared with the strong, coarse denticles on the heavily calcified, somewhat flared labrum of *T. costata*. This also applies to the columellar denticles of *T. multicosata*, which are weakly formed in comparison with the coarser denticles situated along a distinct calcified ridge of the columellar peristome in *T. costata*. The spire of *T. multicosata* is more rounded and less produced than that of *T. costata*. The base of *T. multicosata* is rounded, whereas in *T. costata* it is somewhat flattened. *Trivia costata* is normally much darker in color compared with the faint pink hue of *T. multicosata*.

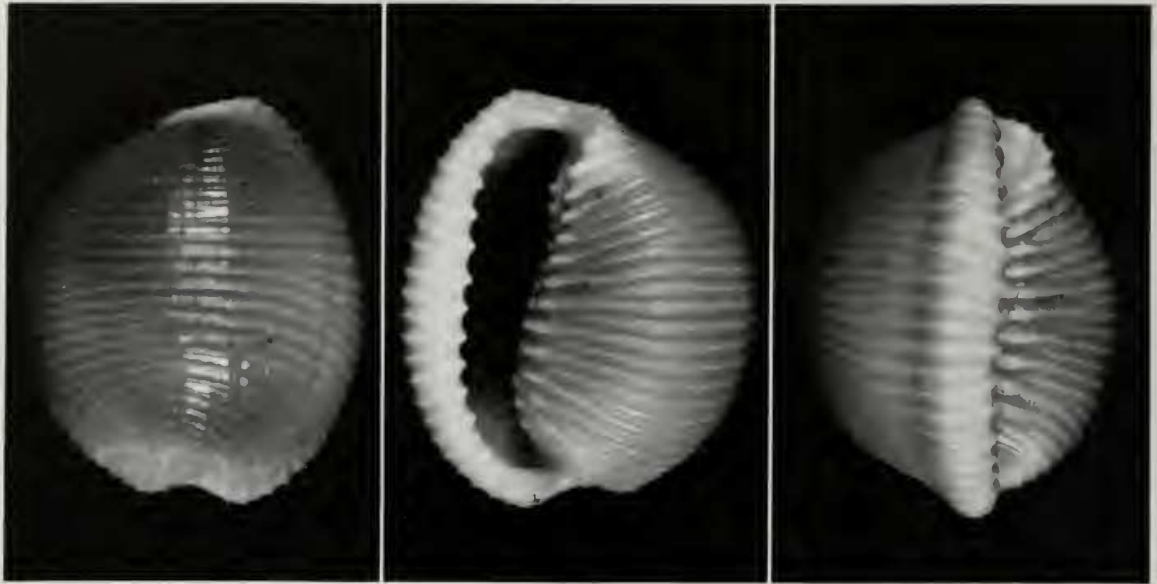


Figure 9

Trivia virginiae, spec. nov. Holotype shell, 9.8 mm long. Dorsal, ventral, and lateral views.

Trivia virginiae Liltved, spec. nov.

(Figure 9)

Shell: Medium sized for *Trivia*, spherical, thin, with terminals being only slightly produced. Labrum narrow and protrudes slightly exteriorly. Ten to fourteen fine denticles situated along inner edge of labrum, evenly spaced, pointed with wide, semicircular interstices. Fine, closely spaced ribs cross labrum and extend continuously around body whorl, over columellar peristome into aperture. Columellar denticles arise as thickened, elongate portions of transverse ribs crossing columellar peristome. Unusual secondary row of denticles occurs within aperture, forming continuous row merging with fossular denticles. Fossular area slightly convex, fossula somewhat humped. Aperture fairly wide, bowed, and dilated anteriorly. Spire produced, rounded and crossed vertically by fine ribs extending upward from small funicular callosity situated at anterior end of base adjacent to aperture. Body whorl light pink, labrum white.

Measurements:

	length (mm)	width (mm)	height (mm)
holotype	9.8	8.4	7.2
paratype A	9.2	7.8	5.9
paratype B	9.8	6.8	5.4

Type locality: Off Cape St. Blaize (34°00'S, 22°00'E), eastern Cape Province, South Africa.

Type depository: The holotype (SAM A36813) and two

paratypes (SAM A36814) have been deposited in the South African Museum. The specimens were collected by fishermen on commercial trawlers on an undetermined date.

Habitat and distribution: The type specimens were taken from the stomachs of fish, *Congiopodus torvus* (Walbaum) and *C. spinnifer* (Smith), trawled at ± 100 m, off Cape St. Blaize, eastern Cape Province, South Africa. Known only from the type locality.

Etymology: The new species is named in honor of my mother, Virginia Oosthuizen-Liltved, who first introduced me to the splendors of the natural world.

Discussion: *Trivia virginiae*, spec. nov. is most closely allied to *T. eratoides*, spec. nov. Distinguishing features are noted under discussion of the latter species.

Trivia eratoides Liltved, spec. nov.

(Figure 10)

Shell: Medium sized for *Trivia*, slender pyriform in shape. Anterior terminal greatly produced, curving slightly to left. Posteriorly, spire extends beyond posteriormost edge of labrum. Thirteen to fourteen fine-pointed denticles with semicircular interstices extend transversely as ribs, over body whorl and into aperture. Of 6 specimens examined, 3 exhibited darkly pigmented streak, giving impression of dorsal sulcus. These pigmented streaks are overlain by unbroken transverse ribs. Columellar denticles arise as elongate swollen areas on transverse ribs along columellar peristome. Normally these denticles are very sparse and

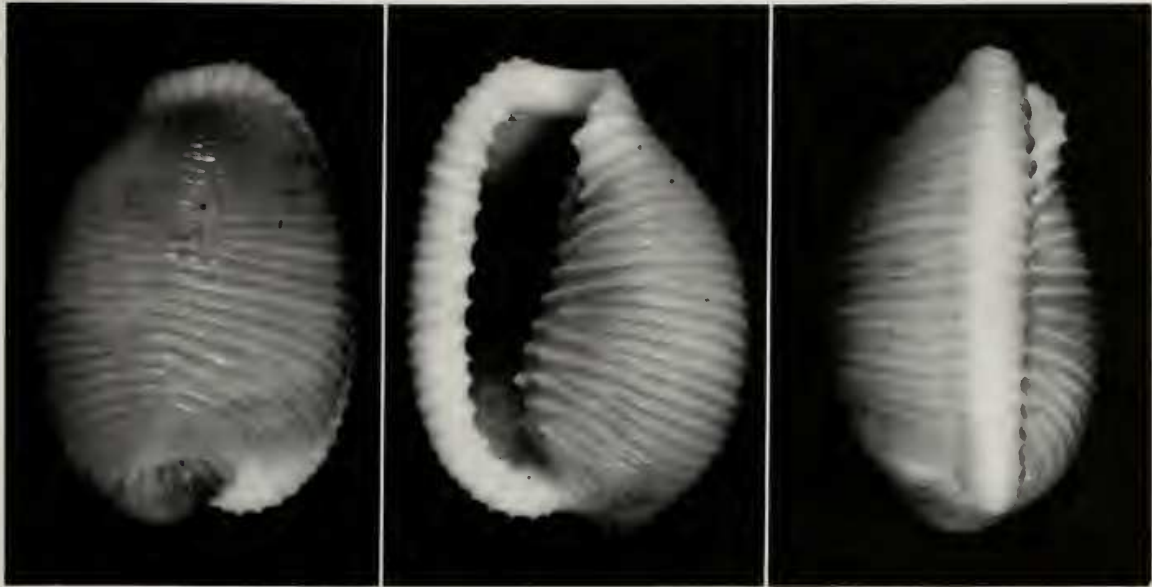


Figure 10

Trivia eratooides, spec. nov. Holotype shell, 9.7 mm long. Dorsal, ventral, and lateral views.

uneven, concentrated mainly at posterior end of aperture. Anterior terminal ridge strongly developed, somewhat "claw-like," transversely cut with bladelike ribs. Prominent, calcified ridge within aperture gives rise to pronounced secondary row of denticles forming continuous line with fossular denticles. Denticulate fossular area deeply concave, overlapped by overhanging terminal ridge. Aperture wide, anteriorly greatly dilated. Spire unusually large for species of this size. Spire apically rounded, crossed vertically by riblets extending upward from funicular area. Dorsally shell is pink to white, most often heavily calcified basally and white in color.

Measurements:

	length (mm)	width (mm)	height (mm)
holotype	9.7	7.1	5.5
paratype	9.7	6.9	5.4

Type locality: Off Cape St. Blaize (34°00'S, 22°00'E), eastern Cape Province, South Africa.

Type depository: The holotype (SAM A36815) and paratype (SAM A36816) have been deposited in the South African Museum. The specimens were collected by fishermen on commercial trawlers on an undetermined date.

Habitat and distribution: The type specimens were taken from the stomachs of fish, *Congiopodus torvus* (Walbaum) and *C. spinnifer* (Smith), trawled at ± 100 m, off Cape St. Blaize, eastern Cape Province, South Africa. Known only from the type locality.

Etymology: From *Erato*, the generic name of an allied group of Triviidae, and the suffix *-oid* from new Latin, meaning "a likeness to," reference to the superficially similar shape of the new species to the shape of shells belonging to the genus *Erato*.

Discussion: Of all endemic southern African species, *Trivia virginiae*, spec. nov. and *T. eratooides*, spec. nov. seem to be conchologically most closely allied. Initially, *T. virginiae* is separable from *T. eratooides* by the possession of a spherical shell as opposed to being slenderly pyriform in shape. The latter in addition is more heavily calcified. Characteristics of the columellar dentition in both species are particularly noteworthy. Both species similarly have two separate rows of columellar denticles, one row situated along the columellar peristome and another within the aperture, lying horizontally on the same plane as the fossula. The exterior row in *T. virginiae* is most prominently defined, whereas the inner row is less well developed. The opposite is true of *T. eratooides*, in which the exterior row lacks definition and the interior row is made up of long rugose denticles. The terminal ridge is well defined in both species, but is markedly more prominent in *T. eratooides*. The spire of *T. eratooides* is far more elevated and prominent than in *T. virginiae*. *Trivia virginiae* is generally pinkish, whereas *T. eratooides* is usually white.

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